U.S. Army Research Institute for the Behavioral & Social Sciences

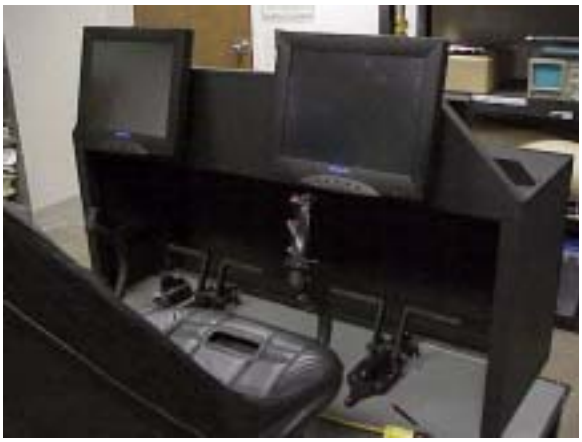
FACT SHEET

ROTARY-WING ADVANCED NETWORKED TACTICAL SIMULATORS (RANTS)

RANTS is being conducted under a Cooperative Research and Development Agreement between ARI and CAE Electronics, Ltd. of Montreal, Canada. The objective is to develop rotary-wing aircrew training technology requirements and methods in networked simulation environments.

ARI's Rotary-Wing Aviation Research Unit (RWARU) is engaged in a program of empirical research aimed at identifying the critical elements for the use of simulation for training helicopter pilots. This program seeks to identify the characteristics and best practices for the use of simulation across the full range of rotary wing pilot training: from initial qualification through advanced qualification to unit and collective skill acquisition and maintenance. RWARU has begun to address mixing flight simulators of various types along with aircraft to enhance the efficiency and training effectiveness of Army flight training programs. In addition to the acquisition of flying skills, ARI is concerned with the development and retention of aircrew skills that are critical to tactical capabilities. These unit, or collective skills, if practiced in the aircraft would require that a number of aircraft missions be flown so that crews may practice these skills. This approach to skill development has proven to be excessively costly, so the Army has begun to rely upon simulation devices networked together to provide a training and practice environment for aircrews to practice critical unit and collective tasks.

Cooperative efforts between ARI and CAE can develop and evaluate methods for conducting unit and collective training of rotary wing aircrews and other teams or groups which require similar levels of individual skill paired with a requirement to operate as a collective unit. These technologies and methods can be transferred to both the private and public sectors for military and civilian training.



U. S. Army Research Institute Rotary-Wing Aviation Research Unit, Fort Rucker, AL 36362

AH-64A simulators in a Distributed Interactive Simulation / High Level Architecture (DIS/HLA) network with up to five low cost AH-64A/OH-58D cockpits. This provides for nine manned crew stations within a highly representative synthetic tactical environment. Four of the cockpits will be integrated at ARI as the pilot and copilot/gunner positions for two AH-64A simulators, and networked with the OH-58D simulator. This combination will be able to train tactical operations as a light Scout/Attack Team.

The project builds expertise in assembly and networking low cost military simulators for new applications and permits the evaluation of a broad variety of training approaches, performance evaluation methodologies, and synthetic training equipment (STE) technologies.

The low-cost cockpits are designed to use as much commercial-off-the-shelf (COTS) technology as possible to reduce costs and allow for easy modifications and upgrades. The approach is to define the aircraft systems requirements associated with a set of training tasks and represent only those on the cockpit control/display touch screens.

The OH-58D/AH-64A system software includes the flight and aerodynamic models, engine model, weapon systems model, DIS/HLA interface, terrain map system and data collection system. The PC-based Experimenter Operator Station (EOS) allows control of the simulator and data collection system.

The research emphasis for the system is to support experiments to determine requirements for Tactical Training in the OH-58D/AH-64A with emphasis on collective (especially Unit) training for mission specific tactics and doctrine. This includes investigation of:

- Mission planning, brief, execution, debrief;
- Metrics for performance assessment, MOP/MOE development, data element identification and data source identification;
- Tools for data recording/analysis, methodologies for performance measurement in networked exercises, network exercise planning and management;
- Aircraft systems fidelity, including sensors, ECM, weapon systems, communications access;
- Synthetic/tactical environment fidelity including Computer-generated forces, command, control and communications;
- Simulator Visual Fidelity Requirements for Tactical Training including: image generator scene content, resolution, textures, levels of detail, display type, field-of-view, resolution, luminance, contrast, and sensors (e.g. NVG, FLIR);
- Cockpit physical fidelity including controls and displays, on-board systems access.

For additional information, please contact Dr. William R. Howse, ARI Rotary-Wing Aviation Research Unit, DSN 558-3686 or Commercial (334) 255-3686, or email at howsew@rwaru.army.mil